

**ORIGINAL****HALPRIN, TEMPLE, GOODMAN & MAHER**

555 12TH STREET, N.W., SUITE 950 NORTH  
 WASHINGTON, D.C. 20004  
 (202) 371-9100 TELEFAX (202) 371-1497  
 HTTP://WWW.HTGM.COM

**RECEIVED****FEB 2 2001**

FEDERAL COMMUNICATIONS COMMISSION  
 OFFICE OF THE SECRETARY

ALBERT HALPRIN  
 RILEY K. TEMPLE  
 STEPHEN L. GOODMAN

WILLIAM F. MAHER, JR.  
 JOEL BERNSTEIN  
 RICHARD T. WHITE, JR.

February 2, 2001

Ms. Magalie Roman Salas  
 Secretary, Federal Communications Commission  
 445 12<sup>th</sup> Street, S.W.  
 Washington, DC 20554


*Re: Deployment of Wireline Services Offering Advanced Telecommunications Capability and Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, CC Docket No. 98-147 and CC Docket No. 96-98*

Ex parte presentation pursuant to C.F.R. §1.1206

Dear Ms. Salas:

Catena Networks, Inc. ("Catena") met yesterday with staff of the Policy & Program Planning Division of the Common Carrier Bureau and the Office of Engineering and Technology. Gary Bolton, Jim Hjartarson, Doug Cooper and the undersigned counsel for Catena attended the meeting on behalf of Catena. Attending the meeting from the Commission were Jessica Rosenworcel, William Kehoe, Kimberly Cook, Elizabeth Yockus, Rodney McDonald, Johanna Mikes, Aaron Goldberger, Alex Johns, Jerry Stanshine, Brent Olson, Paul Marrangoni, and Michelle Carey. During the meeting, Catena discussed recent developments at its company, as well as its positions in this proceeding. These discussions are reflected in the attached charts and press releases, which were distributed at the meeting.

Respectfully submitted,



Stephen L. Goodman

Counsel for Catena No. of Copies rec'd 0

List A B C D E



**Ex parte presentation**  
*Further NPRM Comments*  
*CC Docket No. 98-147, 96-98*

**Gary Bolton**  
**VP Product Marketing**  
**February 1, 2001**

# *Catena Comment Summary*

---

## **Basic Premise**

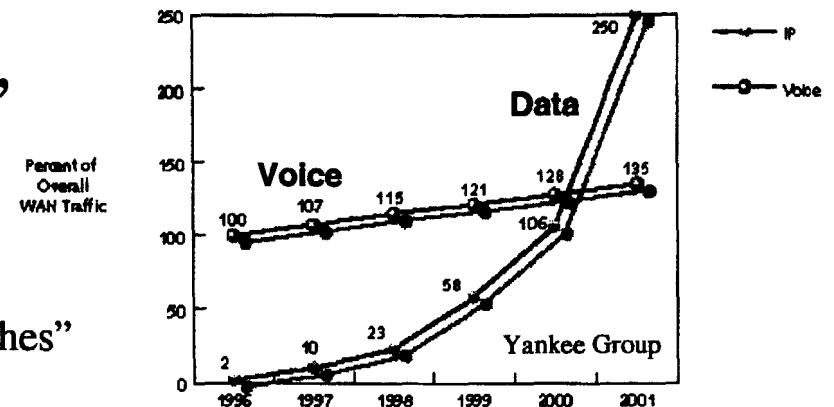
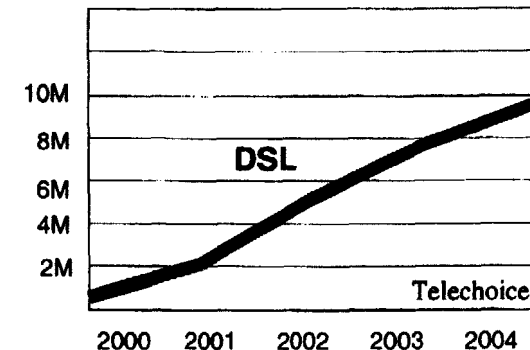
- Catena's focus is to drive technology innovation and integration to enable advanced services, specifically DSL, to be as ubiquitous, affordable and available as POTS is today
- Regulatory policy should encourage, not impede, technology innovation and silicon integration that will significantly benefit all Americans

## **Catena's Comments:**

- Adopt a regulatory collocation model for remote terminals that allows virtual collocation
  - RT collocation model must allow the integration of POTS and DSL on a single subscriber loop interface
- CO collocation regulatory model is not generally extendable to remote terminals
  - Economic barrier to competition
  - Proliferates digital divide and slows deployment
  - POTS Splitter complications
  - Prevents deployment of important advances in technology and services

# Industry Trends

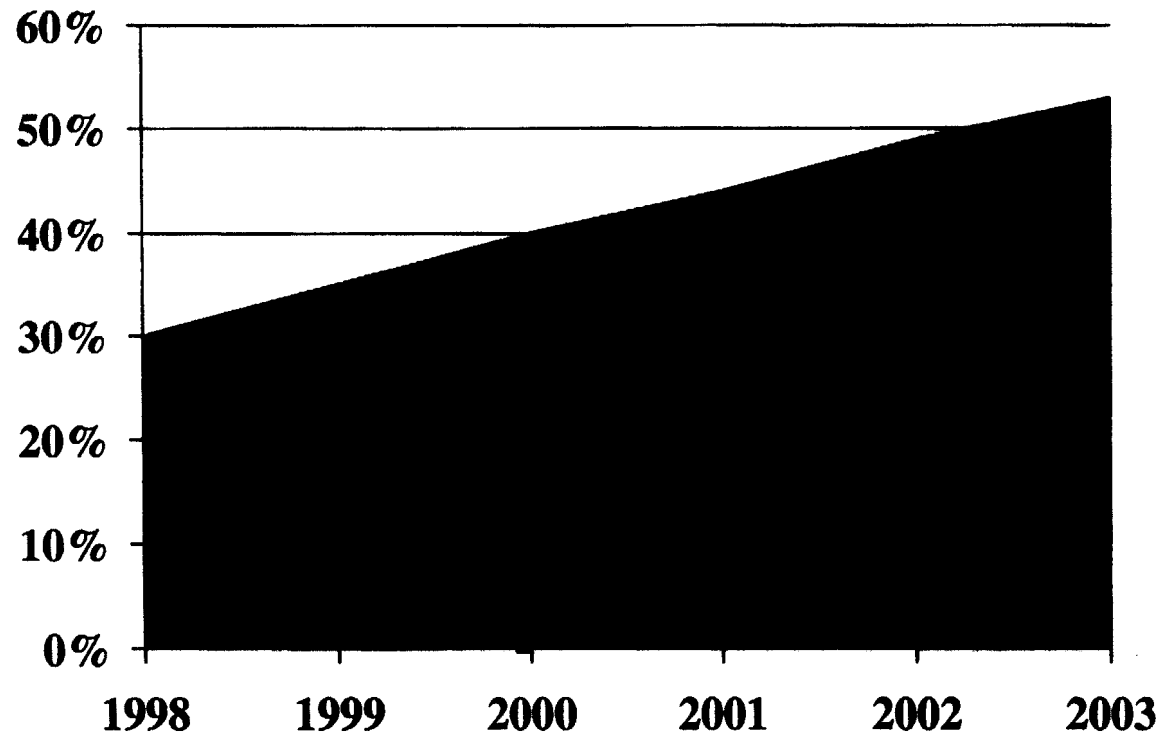
- **Significant demand for DSL service**
  - DSL market expected to grow 128% per year through 2003
  - Over 40% of subscribers still unable to get DSL
  - 157% subscriber increase reported on FCC Form 477
- **The majority of subscribers will be served from Remote Terminals (RTs).**
  - 60%+ of new lines are deployed from RTs
  - In 2 years, half of subscribers will be served from RTs
- **Voice and Data are migrating to a converged, packet-based network**
  - The volume of Data traffic has over taken Voice on today's TDM-based network
  - In 3 years, TDM voice switches will start being displaced by converged packet-based "soft switches"



# *Access Trends*

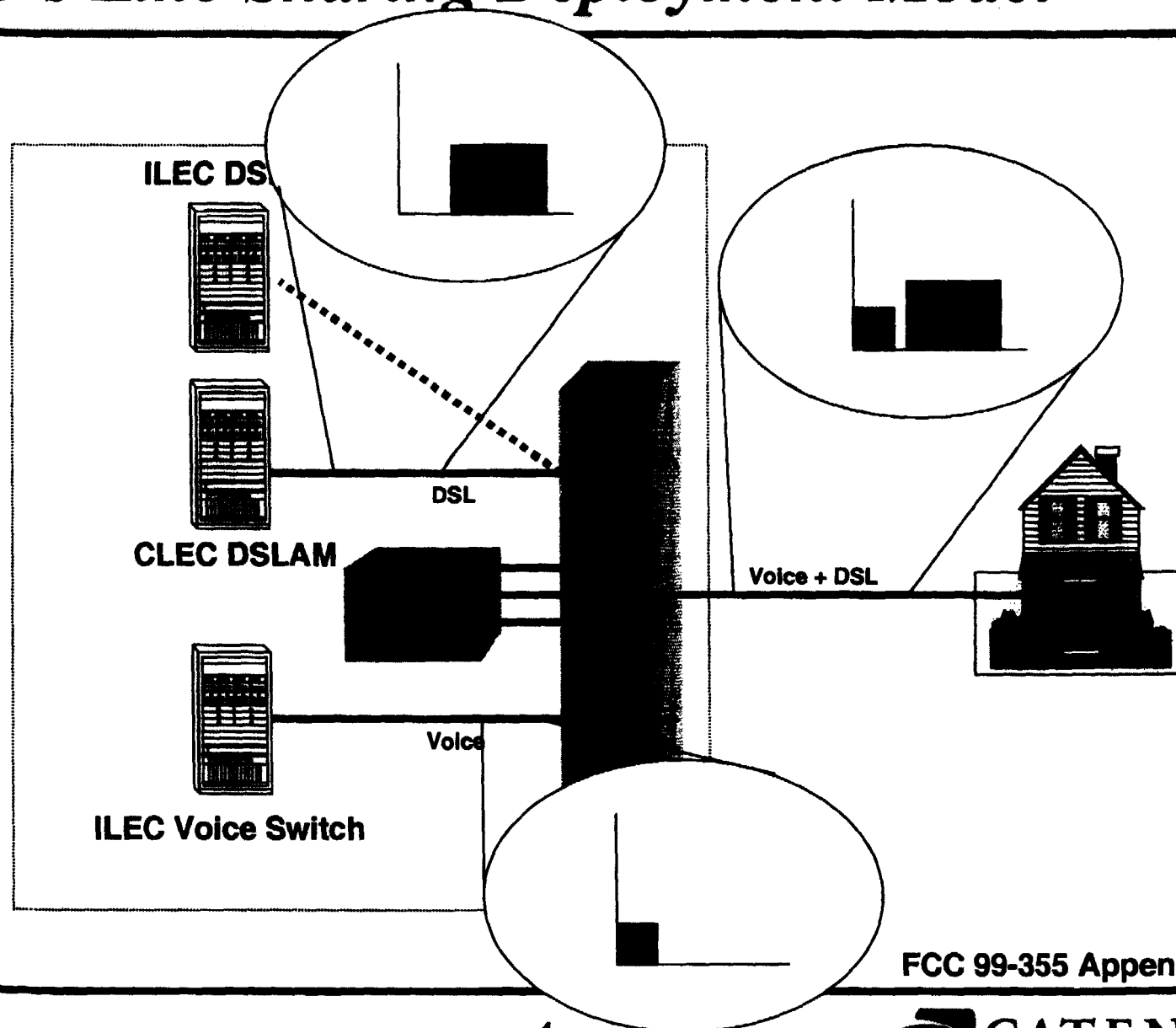
---

Access Lines served by RTs



*Within 3 years, the majority of subscribers will  
be served from Remote Terminals (RTs)*

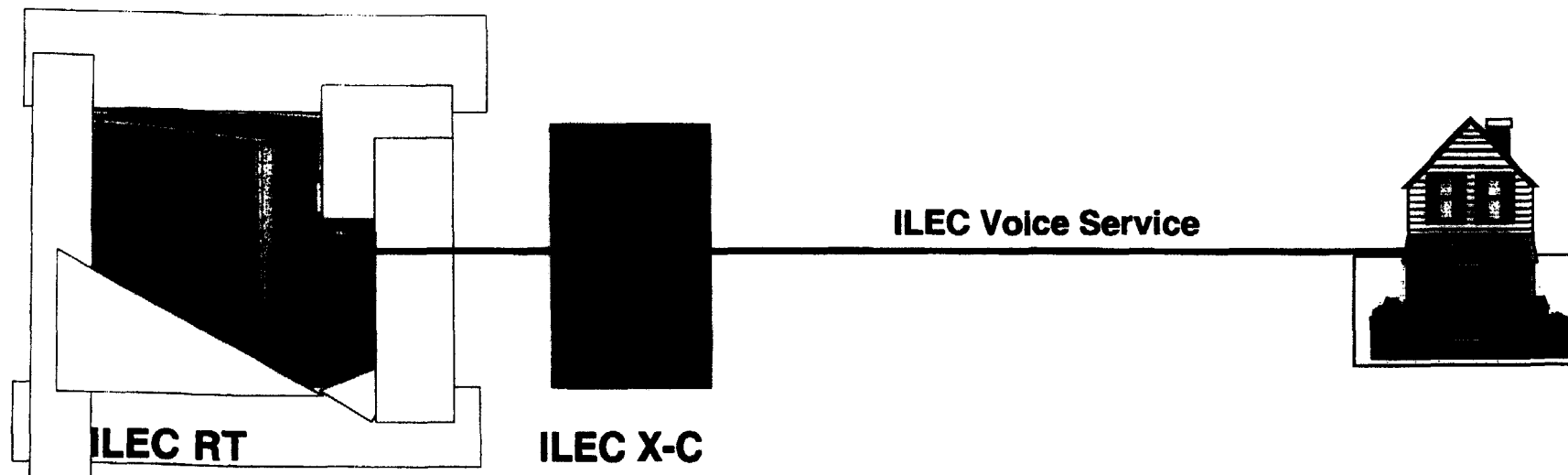
# *FCC's Line Sharing Deployment Model*



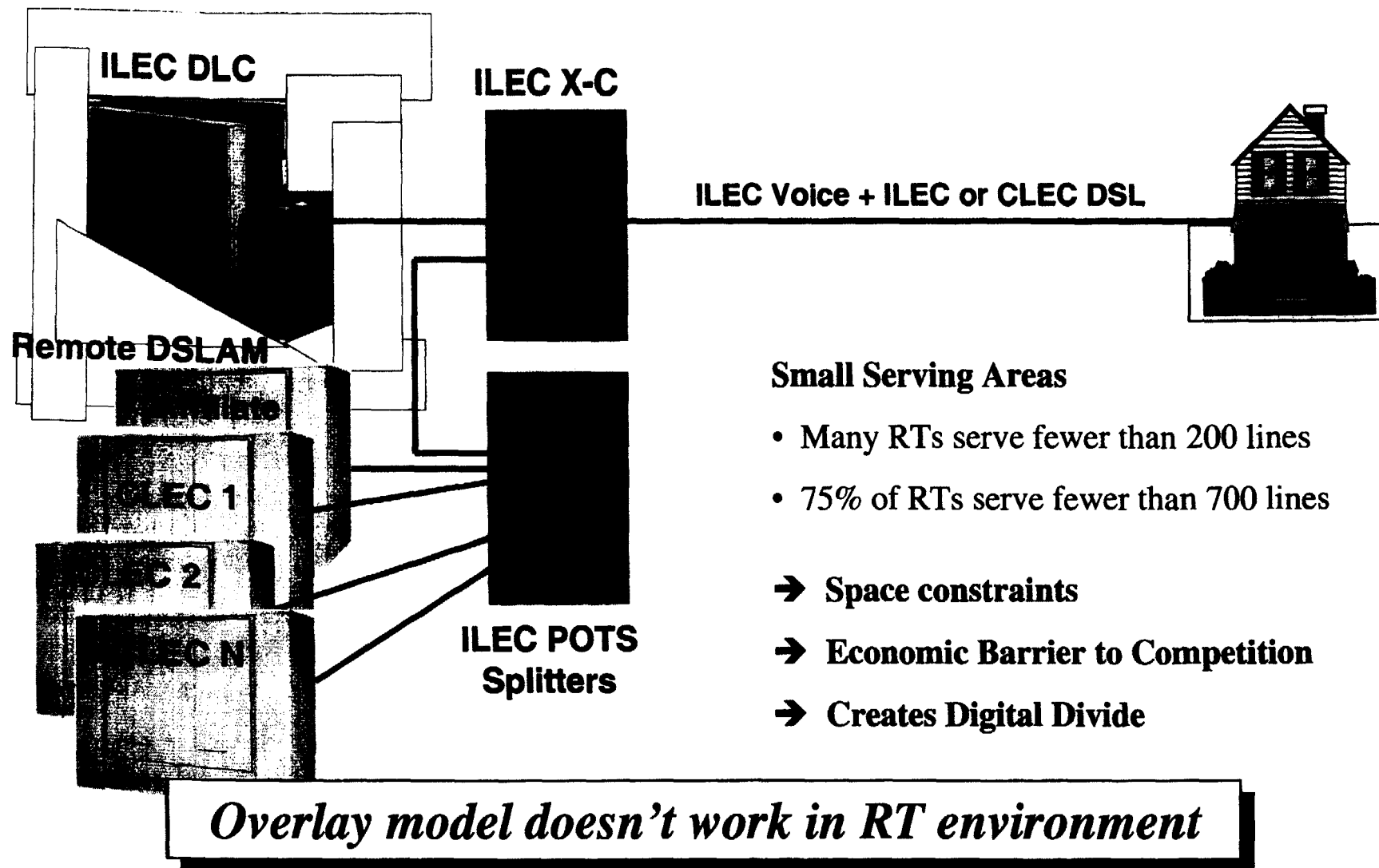
FCC 99-355 Appendix C

# *Today's RT Deployment Model*

---



# *Implementing Line Sharing on RTs*

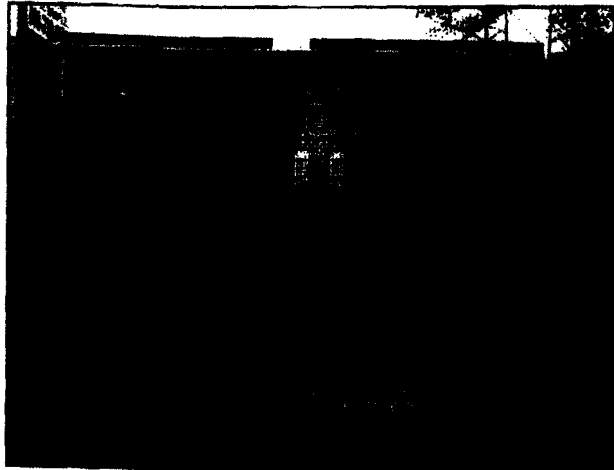




# *Current Solutions Fall Short*

---

## **Mini-Ram**



- Space constrained
- Tough to install
- Can support a maximum of only 16 DSL lines

## **Remote DSLAM**



- Prohibited capital and operational cost
- “Easement” issues
- Construction lead-time

***Economic and physical space barriers to competition***

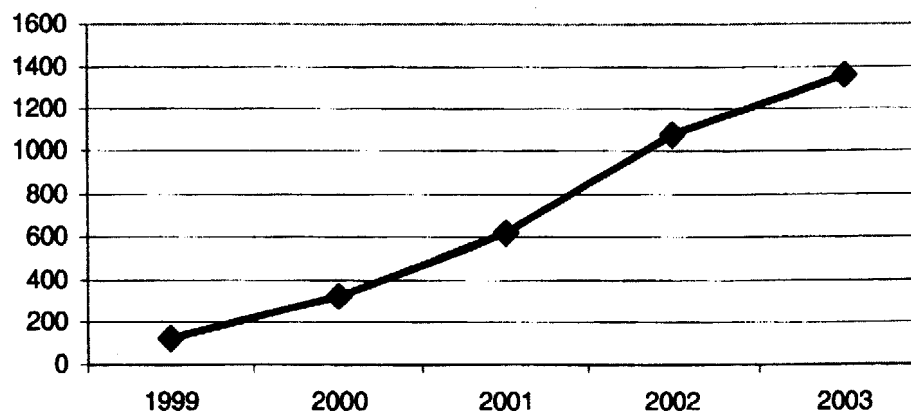
# *Fiber In The Loop (FITL)*

*Where do you put POT Splitters and Remote DSLAMs?*



**FITL Lines Shipped (K)**

Gartner



**Service Providers continue to drive fiber closer to subscribers**

- Better service (higher data rates)
- Smaller serving areas

*Remote Terminals require an integrated deployment model*

# *A Better Way: Integrated POTS+DSL Linecards*

---

- **Simple and Elegant**

- Integrated POTS+DSL linecards eliminate the need for overlay cabinets, complex wiring, pouring pad and resource-intensive installations.

- **Economically Viable**

- An integrated POTS+DSL linecard deployment architecture is the most cost effective, expedient method for service providers to achieve mass-market DSL deployment in remote serving areas.

- **Scalable**

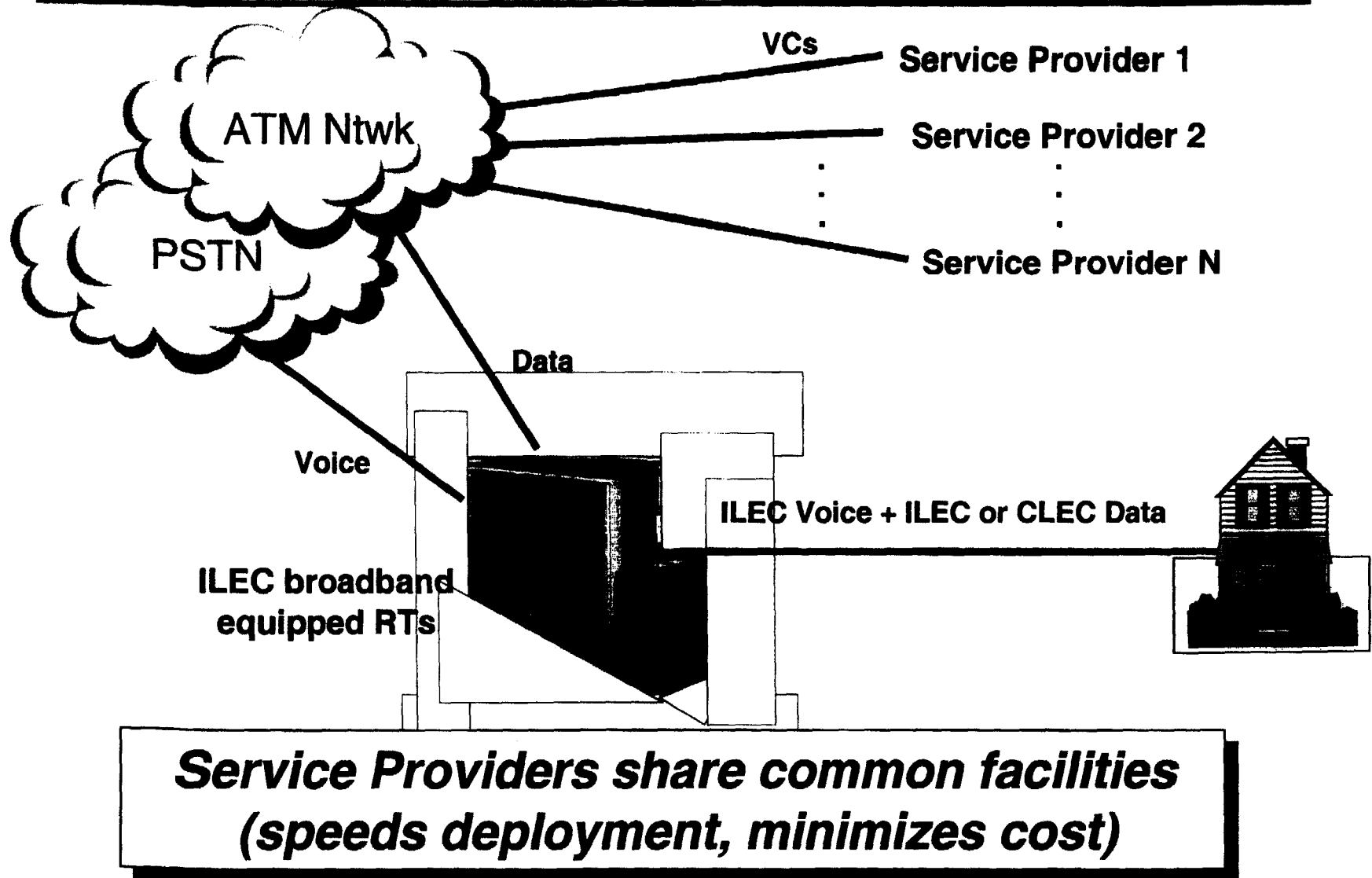
- Advancements in DSL silicon technology enable service providers to upgrade existing DLCs on a linecard-by-linecard basis, with no reduction of POTS port capacity.

- **Reliable**

- Integrated POTS+DSL linecards eliminate complex wiring and overlay equipment and reduce the number of network failure points.



# *Virtual Unbundling*



# ***Benefits of integrated POTS+DSL RT sol'ns***

---

- **DSL coverage - *eliminate the Digital Divide***
  - Addresses rural subscribers and communities
- **Simple and elegant**
  - No complex wiring, simple RT plug replacement for easy DSL upgrade
- **Low start-up costs**
  - Lowest possible DSL solution for RTs
- **Scalable**
  - Unlike overlay solutions, integrated solutions are granular and scalable
- **Speed of deployment**
  - Accelerates DSL deployment to communities currently unaddressed
- **Amortized backhaul**
  - Common facilities amortized over entire serving area
- **Reliability**
  - Eliminates complex wiring, significantly reduces number of network failure points
- **Economically viable**
  - Lowers economic competitive barrier to entry, allows affordable consumer pricing

# *Issues with POTS Splitters*

The Traditional POTS Splitter is a simple magnetic device that mechanically “splits” the Voice band (0-4KHz) from the DSL band (27KHz-1.1MHz)

## ***Background:***

- The CO Line Sharing Order infers POTS Splitters to be the regulatory demarc
  - ILEC provides POTS on the low frequency side of the POTS Splitter
  - CLEC or Data Affiliate provides DSL on the high frequency side of the POT Splitter

## ***The Problem:***

- Regulatory policy is forcing POTS Splitters to become permanently required for DSL deployment
- POTS Splitters prevent ILECs and CLECs from adequately testing and maintaining subscriber loops

## ***The Result:***

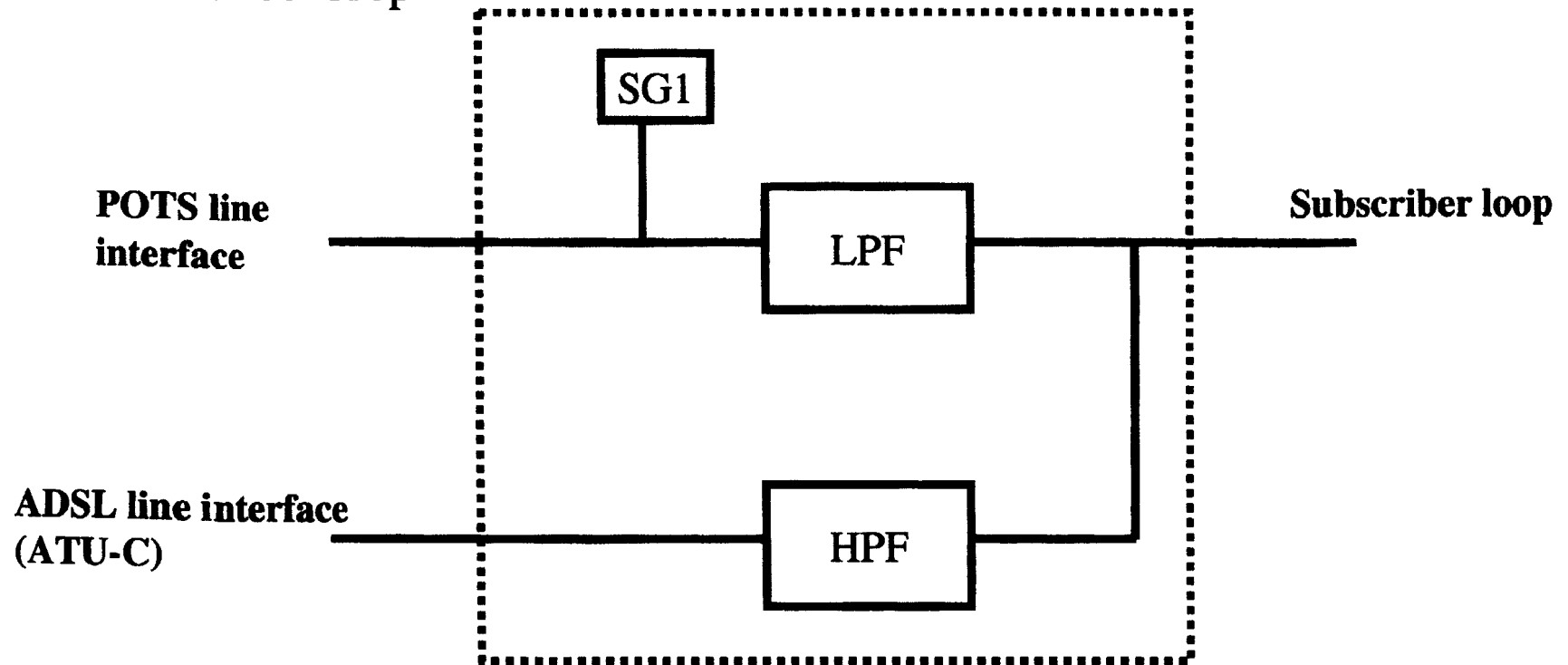
- New highly complex “Smart” POTS Splitters are being proposed
  - Larger, expensive, complex devices requiring expensive ILEC/CLEC test heads
  - In general, POTS Splitters strand bandwidth and decreased network reliability

***POTS Splitters can be eliminated from the RT collocation model***

# *Traditional POTS Splitter*

---

- The traditional way to couple POTS and ADSL signals onto the subscriber loop



LPF = Low Pass Filter  
HPF = High Pass Filter  
SG1 = POTS Splitter Signature

couples 0-4 kHz POTS signals onto the subscriber loop  
couples 25 kHz to 1.1 MHz ADSL signals onto the subscriber loop  
allows POTS test head to determine the presence of a POTS splitter

# *Line Sharing Test Access Requirements*

---

- Sprint's contribution T1E1/2000-266 "Line Sharing Test Access Requirements" identifies the following requirements:
    - The CLEC must have the ability to gain full bandwidth access to a shared loop from a remote location.
    - The ILEC must have the ability to gain full bandwidth access to a shared loop for interference isolation.
    - The CLEC must be able to detect if the voice line is off-hook. This monitoring must be non-intrusive to the voice line.
    - The CLEC must be able to verify connectivity from the collocation area to the customer premises.
    - The CLEC must be able to remove the ILEC supplied battery and ground from the loop to perform testing.
    - DC blocking capacitors must be disconnected from the loop during CLEC testing.
    - The CLEC must be able to perform basic DC tests; loop length, balance and presence of load coils.
    - The CLEC must be able to access the shared loop to examine loop characteristics using a Time Domain Reflectometer (TDR).
    - The CLEC must be able to access the shared loop to perform spectrum analysis using a wide-band noise test set.
    - Intrusive CLEC loop testing must be completed within a timeout period. The timeout period must be adjustable and extendible within limits, (e.g. minimum of 30 seconds to maximum of 5 minutes).
    - If a power failure or control failure occurs during CLEC testing, normal POTS operation must be restored within a preset time period.
    - Normal POTS operation must be restored upon the failure of test access components.
    - The POTS splitter must not require powering.
    - Loop test access must be compatible with existing POTS splitter chassis and wiring.
    - Loop test access must provide "equal access" to any number of CLECs.
    - Remote test access on non-shared lines must be secure.
    - Test technologies that have already been deployed must be utilized to the extent possible.
-

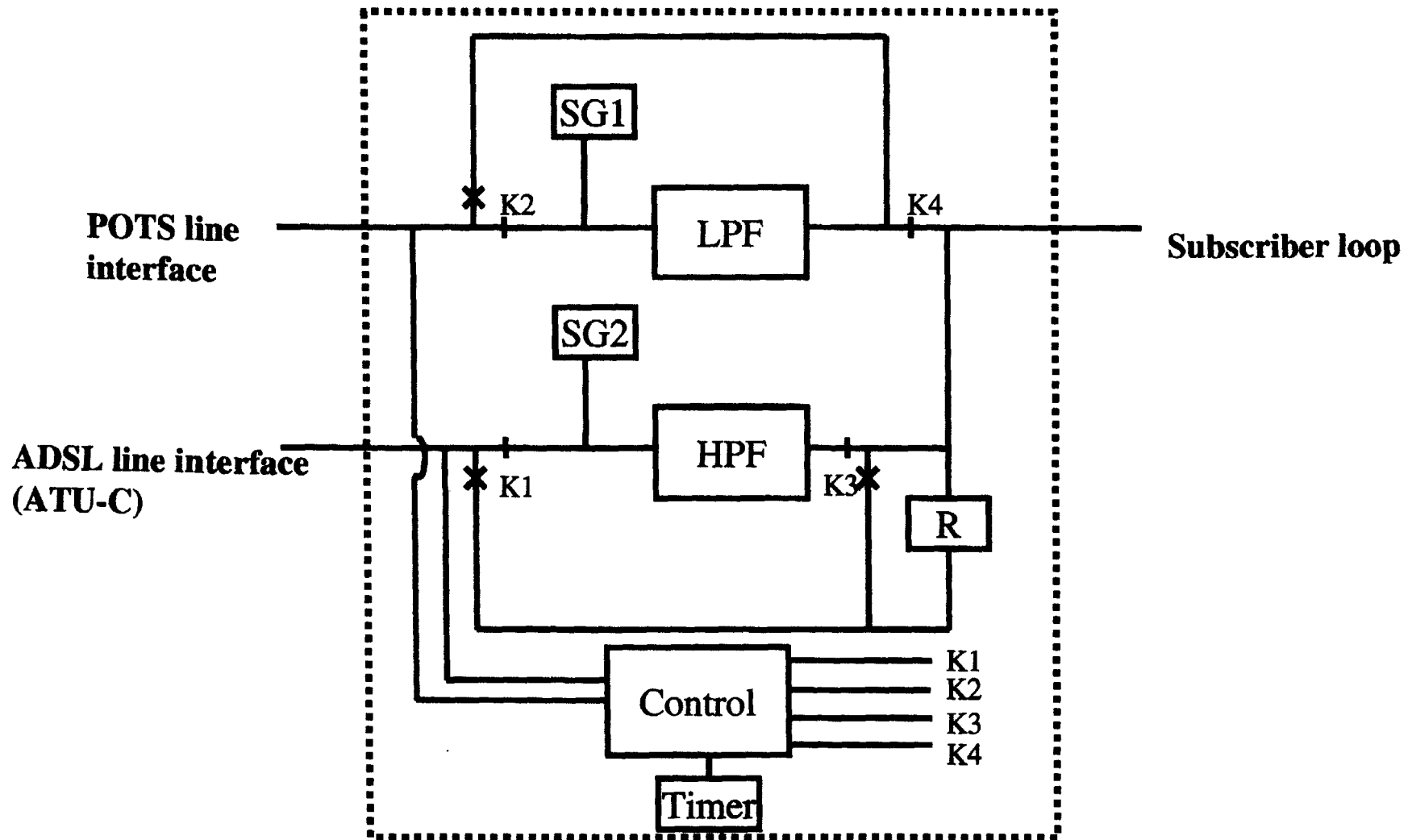


# *Line Sharing Test Access Issues*

---

- The traditional POTS splitter approach for line sharing introduces several problems that prevent the ILEC and CLEC from adequately testing and maintaining the subscriber copper loop
  - HPF prevents CLEC from having DC access to the loop which prevents subscriber loop testing
    - solution is to allow bypass of HPF via a relay contact
  - CLEC must be able to detect if the voice line is off-hook
    - solution is to sense whether the line is off-hook prior to initiating testing
  - LPF prevents ILEC from having full spectrum test capability of the subscriber loop which prevents adequate broadband loop qualification
    - solution is to allow bypass of LPF via a relay contact
  - CLEC must be able to remove the ILEC provided POTS battery and ground to allow loop testing
    - solution is to remove ILEC provided battery and ground via a relay contact
  - If a power or control failure occurs during CLEC testing, normal POTS operation must be restored within a preset time period
    - solution is to provide a time-out function in the splitter which ensures POTS service is restored in the event of a failure

# ***“Smart” POTS Splitter***



## ***Incremental Elements in the “Smart” POTS Splitter***

---

- Elements that are incremental to those in the traditional POTS Splitter in order to address line sharing test access requirements:
  - SG2 is a signature that the CLEC test head can detect to determine the presence of a POTS splitter
  - K1, a relay which allows the CLEC test head to unobtrusively monitor the subscriber loop through a high impedance (R) to determine if the POTS line is in use
  - K2, a relay which provides the ILEC with a short circuit across the LPF to allow full spectrum access to the subscriber loop
  - K3, a relay which, when operated with K1, provides the CLEC with a short circuit across the HPF to allow full spectrum access to the subscriber loop (including DC)
  - K4, a relay which allows the CLEC to remove the battery and ground provided by the ILEC POTS line interface
  - A control block, which controls the relays identified above in response to control signals from either the ILEC or CLEC test heads (controlled via longitudinal signals from the test head)
  - A timer to ensure that in a time-out scenario, all relay contacts are released so that the lifeline POTS service can be restored

# ***POTS Splitter Conclusions***

---

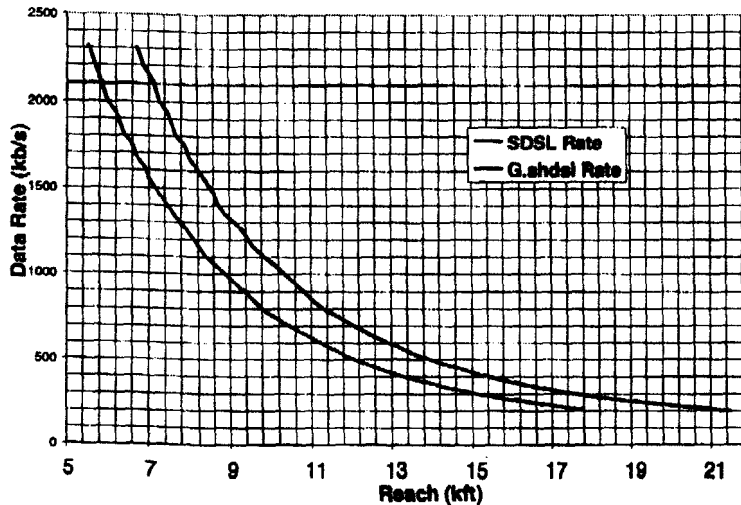
- A “Smart” POTS Splitter, like that pictured previously, is one of the many solutions being proposed to address the operational problems associated with line sharing test access
- All line-sharing test access solutions share the common theme of adding additional complexity to the POTS Splitter and ILEC/CLEC test heads
- The addition of more complexity to the POTS Splitter makes it even larger and more costly than the traditional POTS Splitter. This additional size may be tolerable (although undesirable) in the central office environment, but in the remote cabinet, it is not feasible

# Direction of Technology Innovation & Stds

## SDSL Data Rate vs. Reach

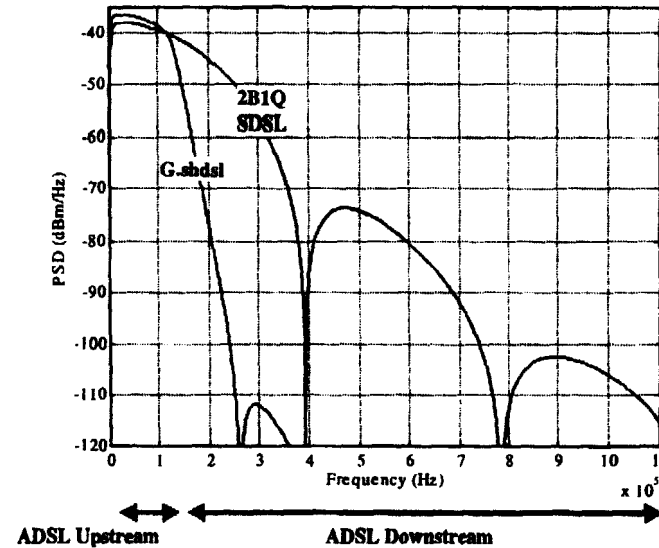
Theoretical Reach: Full Binder Group %1 worst-case (49-self NEXT)

35-45% greater data rate for G.shdsl



Superior Rate/Reach

## PSD: G.shdsl vs. SDSL (768 kb/s example)

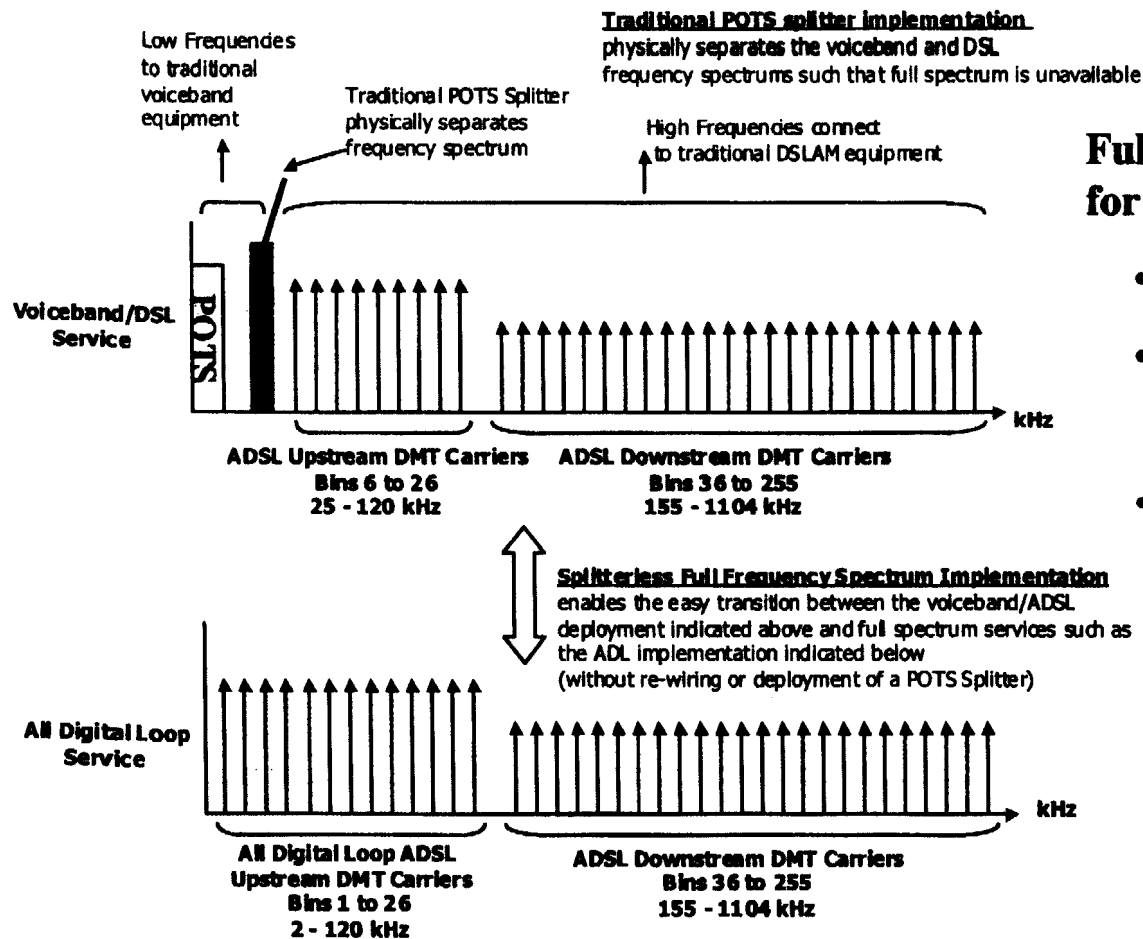


Superior Spectral Compatibility

**G.SHDSL will become the “volume” symmetrical service offering**

- ITU Standard (G.991.2) -> will displace SDSL, HDSL, HDSL2
- 192kbps to 2.312Mbps symmetric (N x 64 kb/s, N=3..36), repeater options

# All Digital Loop - Splitterless Full Spectrum



**Full spectrum is required for full bandwidth services:**

- ADL
- Symmetric services
  - G.SHDSL
- Derived voice

***New services require full spectrum connectivity***

# *Conclusions*

---

- **Virtual collocation, and the deployment of integrated POTS+DSL plug-in cards and solutions, allows service providers to:**
  - Deploy cost effective and efficient network architectures
  - Lower the economic barriers for competitive providers
  - Eliminate the costs and complexities of mechanical POTS Splitters
  - Enable the continued innovation of technology and future services
  - Enhances competition with cable operators and wireless service providers, without eliminating competition between ILECs and CLECs using UNEs
- **Eliminate POTS Splitters as the regulatory demarc**
  - Strands spectrum
  - Adds cost and complexity
  - Stifles network convergence

*Integrated RT solutions allow Advanced Services to become ubiquitous, affordable and available to all Americans*



# News Release

CATENA NETWORKS 303 Twin Dolphin Drive, Suite 600, Redwood Shores, Calif. 94065 Voice 1 866 2CATENA [www.catena.com](http://www.catena.com)

**Company Contact:**

Steve Bauer  
Vice President,  
Corporate Communications  
(630) 499-0852  
[sbauer@catena.com](mailto:sbauer@catena.com)

**Agency Contacts:**

Cathy Summers  
The Ardell Group  
(858) 792-2939  
[cathy@ardellgroup.com](mailto:cathy@ardellgroup.com)

Tara Shields  
Shandwick Canada  
(613) 230-2228  
[tshields@shandwick.ca](mailto:tshields@shandwick.ca)

**Catena Networks Introduces First In Series of Solutions Enabling Mass-Market DSL and Seamless Migration to Converged, Packet-Based Public Network**

*CNX-5 Broadband ADSL System Gives Carriers a Fast, Cost-Effective, Scalable Way to Upgrade Digital Loop Carrier Systems*

**WASHINGTON, D.C. – January 30, 2001** – At COMNET 2001 in booth number 4108, Catena Networks introduced the first in a series of solutions that will enable the mass-market deployment of residential DSL and provide carriers with a seamless migration path to the converged, packet-based public network.

The Catena CNX-5 ADSL system for upgrading Lucent SLC® Series 5 (SLC-5) Digital Loop Carrier (DLC) Systems enables service providers to deliver Plain Old Telephone Service (POTS) and Asymmetric Digital Subscriber Line (ADSL) services on any copper pair, without reducing the number of available POTS lines.

The CNX-5 gives carriers a fast, cost-effective and scalable way to provide revenue-generating DSL services to the more than 20 million residential subscribers served by SLC-5 remote terminals.

The exploding demand for residential broadband services has created an urgent need for service providers to deliver DSL to customers served by these remote terminals. According to the research firm Telechoice, DSL deployments are expected to grow to nearly 8 million by 2002. A recent study by the Cahners In-Stat Group found that ADSL will capture more than 70 percent of the total DSL market by 2004. Further, RHK forecasts that by 2003, more than 50 percent of target ADSL residential subscribers will be served from remote terminals.

However, current solutions for delivering DSL from remote terminals – ranging from bolt-on mini Remote Access Multiplexer (mini-RAM) systems to remote Digital Subscriber Line Access Multiplexers (DSLAMs) and adjunct cabinets – are expensive, inefficient and don't scale to support large volumes of users. These solutions require additional space in a remote terminal cabinet, or worse, an incremental investment in additional concrete pads and cabinets.

-more-



"To establish DSL as a mass-market service for consumers, carriers need a low-cost, scalable solution that addresses last-mile bottlenecks related to remote terminals," said Patrick Hurley, DSL analyst for Telechoice. "Solutions that allow service providers to inexpensively and easily upgrade their existing DLC infrastructure, like Catena's CNX-5 system, will help facilitate large-scale deployments of DSL service."

Bob Machlin, president and chief executive officer of Catena Networks, said, "Catena's linecard integration of POTS and DSL enables broadband deployments today and facilitates a seamless, line-by-line transition to the new converged, packet-based public network of tomorrow."

The Catena CNX-5 system consists of an integrated 2 POTS and 2 DSL port channel unit, an ATM multiplexer card, and the CatenaView Element Management System (EMS), which are the only elements required to upgrade the SLC-5 to support DSL.

This simple, card-for-card upgrade eliminates the need for POTS splitters, cross-connects, external cabling, mini-RAMs, and additional pads and cabinets. In addition, service providers can expand DSL availability in two-line increments as residential demand for DSL increases.

By allowing service providers to handle all DSL service requests through remote provisioning from their network operations center via the CatenaView EMS, the CNX-5 dramatically reduces operational costs. Catena's programmable silicon technology also allows carriers to manage evolving ADSL standards by delivering new features via software downloads – not costly hardware upgrades. The CNX-5 effectively leverages carriers' investments in installed SLC-5 equipment and provides the industry's lowest capital, service activation and lifecycle cost solution.

#### **The Elements of the CNX-5 ADSL Upgrade**

The *Catena Enhanced Channel Unit* (ECU) is the linecard replacement that integrates POTS and ADSL interface technology within the existing SLC-5 chassis. For the technician, the installation of the ECU is the same as a standard SLC-5 POTS channel unit. The Catena ECU sports a red lever on the front of the unit for quickly and easily determining which lines are DSL-enabled.

To support DSL services on the SLC-5, the *Catena Enhanced Channel Test Unit* (ECTU) replaces the existing Channel Test Unit. By employing existing system resources to facilitate communications between the ECU cards and the ECTU, there is no need for external cabling, either between cards or to an external POTS splitter, thus simplifying installation.

Once installed and connected to backhaul facilities, the ECTU is ready to be provisioned for DSL services from the network operations center. The CNX-5 upgrade offers three backhaul options – T1, 4xT1 IMA, and DS-3 – that allow the carrier to start inexpensively and increase backhaul bandwidth as needed.

To provision and manage mass-market DSL services, the CNX-5 uses the *CatenaView EMS* and a complete Application Programming Interface (API) suite. Expandable to hundreds of thousands of lines, CatenaView can be distributed across client/server platforms. The API provides the interfaces necessary to electronically link the CNX-5 to upstream operation support systems and, by utilizing a TCP/IP-based protocol, enables interoperability regardless of platform, operating system, programming language, network hardware or software.

#### **Pricing and Availability**

Catena's CNX-5 is currently shipping to service providers. Pricing for the complete CNX-5 ADSL system starts at less than \$3,000. For more information on the CNX-5, contact Catena at 366-2CATENA or visit the company's web site at [www.catena.com](http://www.catena.com).

-more-

**About Catena Networks**

Catena Networks will enable the mass-market deployment of broadband DSL services and help carriers migrate to a converged access network that integrates their volume voice and DSL operations. With Catena's solutions, service providers can deliver integrated voice, data and video services to residential subscribers more quickly, cost effectively and profitably than ever before. Headquartered in Redwood Shores, Calif., the company operates a world-class research and development facility in Kanata, Ontario, Canada (near Ottawa) and has more than 240 employees across North America. Founded in 1998, Catena is a privately held company that has secured more than \$100 million in venture financing. For more information, please access [www.catena.com](http://www.catena.com).

# # #

Catena, Catena Networks, and the Catena Networks logo are trademarks of Catena Networks, Inc. All other trademarks or service marks mentioned in this document are the property of their respective owners. © 2001 Catena Networks, Inc. All rights reserved.



# News Release

**CATENA NETWORKS** 303 Twin Dolphin Drive, Suite 600, Redwood Shores, Calif. 94065 Voice 1 866 2CATENA [www.catena.com](http://www.catena.com)

**Company Contact:**

**Steve Bauer**  
Vice President,  
Corporate Communications  
(630) 499-0852  
[sbauer@catena.com](mailto:sbauer@catena.com)

**Agency Contacts:**

**Cathy Summers**  
The Ardell Group  
(858) 792-2939  
[cathy@ardellgroup.com](mailto:cathy@ardellgroup.com)

**Tara Shields**  
Shandwick Canada  
(613) 230-2228  
[tshields@shandwick.ca](mailto:tshields@shandwick.ca)

## **Catena Networks Creates New Access Architecture for the Mass-Market Deployment of Broadband DSL Services**

**WASHINGTON, D.C. – January 30, 2001 –** At COMNET 2001 in booth number 4108, Catena Networks today announced its development of a new access architecture, which will enable the mass-market deployment of residential Digital Subscriber Line (DSL) services. This new architecture will provide carriers with a smooth, cost-effective migration path to the converged, packet-based public network.

The exploding demand for residential broadband services has created an urgent need for service providers to deliver DSL at high volumes. According to market research firm RHK, the high-speed DSL Internet access market is expected to grow from 2.4 million subscribers today to about 19 million by the end of 2004. Still, more than 40 percent of residential subscribers are unable to get DSL because they do not meet specific connection criteria or because deployment hasn't kept pace with demand in their area.

The challenge is that today's DSL data access network is being designed as a separate overlay to the voice network. This data overlay network is satisfactory for the deployment of niche, business-oriented services, but it is not scalable for consumer mass-market deployment.

"In order to deploy mass-market DSL to residential subscribers, carriers must deliver DSL to the growing number of remote subscribers served by Digital Loop Carrier (DLC) systems," said Claude Romans, co-director of access networks for RHK. "Catena has developed an architecture that terminates the loop at the first access point and has the potential to offer carriers a way to deliver high volume voice and DSL services to remote subscribers."

For carriers to successfully deploy mass-market DSL, a fundamental change in the access network is required. A new, converged access architecture is needed to overcome last-mile barriers to DSL service for residential subscribers. Network elements in this architecture must satisfy the escalating demand for DSL service and handle growing numbers of users served from existing and future remote terminals.

Catena's solutions will enable mass-market deployment of DSL and access network convergence by integrating POTS (Plain Old Telephone Service) and DSL on every line.

-more-

"Unlike other solutions that attempt to combine POTS and DSL, Catena's solutions integrate POTS and DSL into a single access termination point," said Bob Machlin, president and CEO of Catena Networks. "This level of integration enables us to create an architecture that will simplify the access network, solve deployment bottlenecks and dramatically reduce carriers' capital and operational costs."

Catena's converged access architecture will significantly reduce the capital and operational costs of deploying DSL service by providing DSL on every line, at prices approaching POTS-only solutions. Every subscriber line will support lifeline telephone service and will be "DSL ready" the moment it is installed, which means that service providers can scale service rapidly, without additional capital costs, as their DSL demand grows.

All operations, provisioning and maintenance can be performed remotely. All DSL service requests will be handled through completely hands-off remote provisioning from the network operations center. No truck rolls will be required.

Catena's highly integrated POTS+DSL architecture will eliminate the need for separate, overlay access equipment such as POTS Splitters, remote DSLAMs and adjunct cabinets. This converged access network will significantly reduce complexity and points of failure, resulting in greater network reliability.

Service providers will have full spectrum connectivity to the subscriber loop, which will greatly simplify testing and loop qualification and enable future services such as higher-bandwidth ADSL (Asymmetric Digital Subscriber Line). Further, Catena's architecture supports optional voice packetization, on a per-line basis, at the line termination point. There will be no forced trade-off of packet voice ports for DSL ports.

Catena's new access architecture will enable service providers to deliver broadband services today and seamlessly transition to the new, converged packet-based public network on a line-by-line basis – with the network architect in control of the where and when of implementation.

The first in a series of solutions in Catena's new access architecture is the CNX-5 broadband ADSL system. (See accompanying release, "Catena Networks Introduces First in Series of Solutions Enabling Mass-Market DSL and Seamless Migration to Converged, Packet-Based Public Network.") Catena's CNX-5 is a card-for-card upgrade for the more than 20 million subscriber lines currently served from Lucent SLC® Series 5 (SLC-5) DLC systems. Catena's CNX-5 broadband ADSL system enables service providers to deliver POTS and ADSL services on any copper pair, without reducing the number of available POTS lines.

### **About Catena Networks**

Catena Networks will enable the mass-market deployment of broadband DSL services and help carriers migrate to a converged access network that integrates their volume voice and DSL operations. With Catena's solutions, service providers can deliver integrated voice, data and video services to residential subscribers more quickly, cost-effectively and profitably than ever before. Headquartered in Redwood Shores, Calif., the company operates a world-class research and development facility in Kanata, Ontario, Canada (near Ottawa) and has more than 240 employees across North America. Founded in 1998, Catena is a privately held company that has secured more than \$100 million in venture financing. For more information, please access [www.catena.com](http://www.catena.com).

###

Catena, Catena Networks, and the Catena Networks logo are trademarks of Catena Networks, Inc. All other trademarks or service marks mentioned in this document are the property of their respective owners. © 2001 Catena Networks, Inc. All rights reserved.



# News Release

**CATENA NETWORKS** 303 Twin Dolphin Drive, Suite 600, Redwood Shores, Calif. 94065 Voice | 866 2CATENA [www.catena.com](http://www.catena.com)

**Company Contact:**

Steve Bauer  
Vice President,  
Corporate Communications  
(830) 499-0852  
[sbauer@catena.com](mailto:sbauer@catena.com)

**Agency Contacts:**

Cathy Summers  
The Ardell Group  
(858) 792-2939  
[cathy@ardellgroup.com](mailto:cathy@ardellgroup.com)

Tara Shields  
Shandwick Canada  
(613) 230-2228  
[tshields@shandwick.ca](mailto:tshields@shandwick.ca)

## **Catena Networks Confirms Interoperability with Major DSL CPE Vendors**

**WASHINGTON, D.C. – January 30, 2001** – Catena Networks today announced that its CNX-5 broadband ADSL system is fully interoperable with all of the leading providers of DSL customer premises equipment (CPE) and silicon. In booth number 4108 at COMNET 2001, the company will demonstrate the CNX-5 system functioning seamlessly with DSL modems from Alcatel, Cayman Systems, Efficient Networks, and Infinilink Corp.

Catena successfully tested interoperability with these and a host of other leading DSL CPE vendors at its interoperability lab in Kanata, Ontario, Canada, and at an independent testing lab. The Catena CNX-5 ADSL system is fully compliant with the ANSI T1.413, ITU-T G.992.1 (G.dmt), ITU-T G.992.2 (G.lite) and ITU-T G.994.1 (G.handshake) DSL standards.

"Catena Networks is truly enabling the volume deployment of DSL with its interoperability efforts and standards-based system," said Greg Whelan, director of product marketing for Cayman Systems, Inc. "The synergy between Catena's CNX-5 and Cayman's intelligent broadband gateways provides a compelling, high-speed access solution for the residential subscribers."

"Working with a company such as Catena promotes Efficient's goal of accelerating the adoption and deployment of DSL service to consumers," said Greg Langdon, executive vice president of product strategy for Efficient Networks. "Catena's solutions are paving the way for volume penetration of broadband to the home."

The growing demand for residential broadband services has created an urgent need for service providers to deliver DSL to customers served by remote terminals. Catena's CNX-5 system gives carriers a fast, cost-effective and scalable way to provide revenue-generating DSL services to the more than 20 million residential subscribers served by Lucent SLC® Series 5 (SLC-5) Digital Loop Carrier (DLC) Systems. (See accompanying release, "Catena Networks Introduces First in Series of Solutions Enabling Mass-Market DSL and Seamless Migration to Converged, Packet-Based Public Network.")

"Catena Networks is creating a new access architecture, which we believe will help enable the mass-market deployment of residential DSL service," said Michael Howard, principal analyst for Infonetics Research. "Given the slow rollout rates caused by limitations in the current generation of DSL equipment, a leapfrog approach, such as Catena's, is needed to jump start the broadband bandwagon – a move necessary to make DSL as ubiquitous as POTS."

-more-

Catena's new access architecture is designed to enable mass-market deployment of DSL and access network convergence by integrating POTS (Plain Old Telephone Service) and DSL on every line. Solutions based on this architecture, such as the CNX-5 Broadband ADSL system, also provide carriers with a smooth, cost-effective migration path to the converged, packet-based public network.

The CNX-5 system is fully interoperable with more than 20 DSL CPE and chipset vendors, including: Alcatel, Analog Devices, Aztech Systems, Cayman Systems, Centillium Communications, Cisco Systems, Conexant Systems, Efficient Networks, GlobeSpan, Infinilink Corp., Integrated Telecom Express (ITeX), Lectron, Lucent Technologies, Motorola, PCTEL, Ramp Networks, STMicroelectronics, Texas Instruments, Westell Technologies and ZyXEL.

#### **About Catena Networks**

Catena Networks will enable the mass-market deployment of broadband DSL services and help carriers migrate to a converged access network that integrates their volume voice and DSL operations. With Catena's solutions, service providers can deliver integrated voice, data and video services to residential subscribers more quickly, cost-effectively and profitably than ever before. Headquartered in Redwood Shores, Calif., the company operates a world-class research and development facility in Kanata, Ontario, Canada (near Ottawa) and has more than 240 employees across North America. Founded in 1998, Catena is a privately held company that has secured more than \$100 million in venture financing. For more information, please access [www.catena.com](http://www.catena.com).

###

Catena, Catena Networks, and the Catena Networks logo are trademarks of Catena Networks, Inc. All other trademarks or service marks mentioned in this document are the property of their respective owners. © 2001 Catena Networks, Inc. All rights reserved.



## **Executive Profiles**

### **Robert (Bob) Machlin, President and Chief Executive Officer**

Bob Machlin brings more than 18 years experience in the telecommunications industry, including 12 years in executive management positions as a significant force in escalating developing companies to market leadership positions. Prior to joining Catena in September 1999, Machlin was vice president of worldwide marketing and an executive officer at Ascend Communications. During his tenure, Machlin helped double revenues and played a key role in the \$24 billion acquisition of Ascend by Lucent Technologies.

From 1994 to 1997, Machlin was vice president of marketing and an executive officer of Cascade Communications. He helped grow Cascade's market share to the number one position worldwide in frame relay and ATM and increase revenues from \$7 million in 1994 to \$90 million in 1997.

Prior to Cascade, Machlin held various marketing and management positions with Coral Networks, Amnet, Artel Communications, Motorola Codex, and Honeywell Information Systems. Machlin also was a founding member of the Frame Relay Forum. Machlin holds a bachelor's degree in mechanical engineering from Tufts University and a master's degree in business administration from Harvard Business School.

### **Jim Hjartarson, Chairman of the Board, Senior Vice President of Engineering, and Chief Technical Officer**

Jim Hjartarson has more than 20 years of experience in the telecommunications industry. Prior to forming Catena, Hjartarson was vice president and general manager at Cadence Design Systems, where he co-founded the Cadence Design Center in Ottawa, Ontario, Canada. Hjartarson grew the Design Center from his initial team of six to about 100 employees.

Previously, Hjartarson spent 16 years at Nortel Networks, which culminated in the role of director of global loop and access technology. In this position, Hjartarson and his team invented and launched Nortel Networks' 1-Meg Modem program. The team also was responsible for developing voice, data, ISDN and service-adaptive line cards for Nortel Networks' DMS and AccessNode product lines. These developments included the Nortel Networks World Line Card and other Nortel Networks line cards that have been shipped in volumes exceeding 150 million units.

Jim Hjartarson holds bachelor's and master's degrees in electrical engineering from the University of Manitoba, Canada.

### **Rick DeGabrielle, Vice President of Sales**

With more than 15 years experience in the telecommunications industry, Rick DeGabrielle has developed strong customer relationships with many service providers, including ILECs, IXCs, CLECs and ISPs. Prior to joining Catena, DeGabrielle was vice president of sales at AccessLan Communications, where he was responsible for securing its initial trial accounts. From 1993 to 1997, DeGabrielle was regional director for Cascade Communications. In this position, he managed the sales force for the western U.S. and Canada, grew the business from \$1 million per year to a run-rate of more than \$120 million per year, and achieved a 75 percent market share in his region. Prior to Cascade, DeGabrielle held senior sales positions at several companies, including Network Equipment Technologies, Tymnet, National Semiconductor and Sperry Univac.

DeGabrielle has a bachelor's degree in marketing and a master's degree in business administration from California State University, Long Beach.

**Gary Bolton, Vice President of Product Marketing**

Gary Bolton brings more than 15 years of telecommunications experience from a successful career at Nortel Networks. In his last position, he was responsible for driving the market adoption of Nortel Networks' data access initiatives, which included ADSL, G.Lite, 1-Meg Modem and integrated voice and data strategies. Bolton's key activities and initiatives have significantly influenced industry direction and adoption of high-speed data access architectures, FCC rulings, and telecommunications standards.

Prior to managing Nortel Networks' ADSL and 1-Meg Modem initiatives, he was responsible for Nortel Networks' Hybrid Fiber Coax product line. Bolton also held numerous management positions in marketing and product management, and he was responsible for Nortel Networks' line access portfolio, ISDN and DMS-100 Enhanced Network.

Bolton holds a bachelor's degree in electrical engineering from North Carolina State University and a master's degree in business administration from Duke University.

**Steve Bauer, Vice President of Corporate Communications**

With 13 years of experience in the telecommunications and data networking industries, Steve Bauer has a successful track record of developing strategic communications programs that increase market awareness. Before joining Catena, Bauer was director of corporate communications at Tellabs. He launched a corporate branding initiative that helped the company project a clear and unique image in the market and a proactive public relations program that increased press/analyst coverage of Tellabs.

Previously, Bauer spent four years at Cisco Systems as group manager of public relations for Cisco's Service Provider Line of Business. In his position, he developed proactive media, analyst and customer communications programs to establish Cisco as a strategic partner of service providers. Bauer also held corporate communications positions at National Semiconductor, ROLM and Ameritech.

Bauer has a bachelor's degree in mass communications from Illinois State University.